

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

ITEM 6

ID #14611

ENERGY DIVISION

RESOLUTION E-4761 (Rev.1)

February 25, 2016

R E S O L U T I O N

Resolution E-4761. Adoption of time-of-use (TOU) pricing pilots pursuant to Decision (D.) 15-07-001.

PROPOSED OUTCOME:

- Southern California Edison Company's (SCE's) Time-of-Use (TOU) Pilot Plan advice letter is approved with modifications. SCE shall file a supplemental advice letter in compliance with this Resolution within 21 days.

SAFETY CONSIDERATIONS:

- There is no impact on safety.

ESTIMATED COST:

- The costs of SCE's TOU Pilots are estimated to be in a range of \$10,240,640 to \$26,608,079.

By SCE Advice Letter (AL) 3335-E, filed December 24, 2015.

SUMMARY

On December 24, 2015, Southern California Edison (SCE) filed its Time-of-Use (TOU) Pilot Plan advice letter in accordance with Decision (D.) 15-07-001 (the Decision).¹ The advice letter sets out SCE's plan for three opt-in TOU pilots that will inform their Rate Design Window (RDW) application on January 1, 2018 for a default residential TOU rate and a menu of optional TOU rates. According to the advice letter, SCE's TOU pilots will collect the following information:

¹ D.15-07-001 at 166; 303.

- How TOU rates affect economically vulnerable customers and senior customers. The measured effects will include the average peak and off-peak change in energy usage, the bill impacts, and an assessment of the behaviors underlying any shift or reduction in usage. These and other measured effects will be used to determine whether those customers would face unreasonable hardship if they were to be defaulted onto a given TOU rate.²
- The average peak and off-peak change in energy usage for each TOU rate on a utility-wide scale, as well as in the hot and moderate climate regions.
- The average peak and off-peak change in energy usage for each TOU rate for customers enrolled in the California Alternate Rates for Energy (CARE) program or the Family Electric Rate Assistance (FERA) program, and for non-CARE/FERA customers on a utility-wide scale, as well as in the hot climate region for Rate 2.
- The bill impacts for CARE/FERA customers and non-CARE/FERA customers in SCE's hot, moderate and cool climate regions, and an assessment of the behaviors underlying any shift or reduction in usage for each TOU rate.
- The level of customer understanding, acceptance, and engagement while taking service on a given TOU rate.
- The impact of programmable-communicating thermostats (PCTs) on energy usage and/or customer understanding, acceptance, and engagement while taking service on Rates 1 and 3.

² This determination is required by P.U. Code § 745(c)(2).

- The impact of education and outreach (E&O) materials that are tailored to various customer segments (including seniors, renters, and non-English speaking customers) and to certain cognitive profiles/customer personas on customer understanding, acceptance, and engagement while taking service on a TOU rate.

This information must be collected in the evaluation and analysis of SCE's TOU pilots. SCE is ordered to ensure that the deliverables as outlined in this Resolution are collected through the TOU pilots and presented as part of its January 1, 2018 RDW filing for a default residential TOU rate and a menu of optional TOU rates. A complete list of the deliverables can be found in the Deliverables Table below. SCE's advice letter also contains a request for authorization of TOU pilot study costs as required by the Decision.³

As discussed in detail below, SCE's advice letter, as modified herein, fulfills the requirements of the Decision and is expected to lead to the collection of the deliverables outlined in this Resolution, and is therefore approved subject to modifications that must be made by a supplemental advice letter filed within 21 days.

BACKGROUND

Public Utilities (P.U.) Code § 745 establishes the conditions for implementing default TOU rates for residential electricity customers. The Decision established the pathway toward default TOU rates for all residential electricity customers of California's investor-owned utilities (IOUs) by January 1, 2019.

Section 745 sets out several conditions that must be met before the implementation of default TOU rates for residential customers in 2019. These include:

- Certain classes of customers may not be defaulted without their affirmative consent – customers with medical baseline allowances,

³ D.15-07-001 at 166.

customers requesting third-party notification, and customers that require an in-person visit prior to disconnection.⁴

- The California Public Utilities Commission (Commission or CPUC) must ensure that any TOU rate schedule does not cause unreasonable hardship for senior citizens or economically vulnerable customers in hot climate zones.⁵
- The CPUC must strive for TOU rates that utilize time periods for at least five years.⁶
- One year of bill protection must be provided to customers defaulted to TOU rates.⁷
- A comparison of various rate options and the impact on a customer's bill must be sent to each customer annually.⁸
- A non-TOU rate option must be available for customers to switch to if they choose.⁹
- The CPUC must explicitly consider evidence addressing the extent to which hardship will be caused on: 1) customers located in hot, inland areas, assuming no change in their usage during peak periods, and 2) residential customers living in areas with hot summer weather, as a result of seasonal bill volatility, assuming no change in summertime usage or in peak period usage.¹⁰

⁴ P.U. Code § 745(c)(1).

⁵ P.U. Code § 745(c)(2). Note that the CPUC will separately consider the definition of many of these terms in a Decision in Phase 3 of the R.12-06-013 proceeding.

⁶ P.U. Code § 745(c)(3).

⁷ P.U. Code § 745(c)(4).

⁸ P.U. Code § 745(c)(5).

⁹ P.U. Code § 745(c)(6).

¹⁰ P.U. Code § 745(d)(1)-(2). As with the Section 745(c)(2) terms, the CPUC will separately consider the definition of many of these terms in a Decision in Phase 3 of the R.12-06-013 proceeding.

Many of these requirements can be met without the need for an opt-in TOU pilot (e.g., the requirement to transmit bill comparisons on an annual basis). However, in order to fulfill the requirements embodied in Section 745(c)(2) it is necessary to gather data on how seniors and economically vulnerable customers in hot climate zones respond to TOU rates.

The Decision also notes that parties suggested that the effectiveness of various education and outreach (E&O) strategies for customers on TOU rates be explored before the implementation of default TOU rates for residential customers in 2019.¹¹

Additionally, we note that SCE was ordered through a Joint Assigned Commissioner's and Administrative Law Judge's Ruling (ACR or Ruling) of September 24, 2015 to "prepare a menu of a minimum of three opt-in [TOU] rate designs for piloting beginning in 2016. At least one of the opt-in TOU pilot rates for [SCE] must be a TOU option with a more complex combination of seasons and time periods than traditional TOU rates that better matches system needs, and must begin no later than October 1, 2016. The design of all opt-in pilots must be prepared in 2015 and submitted for Commission review and approval as part of the Tier 3 advice letters required to be filed by D.15-07-001 on January 1, 2016."¹²

Per the Decision's instructions, the IOUs formed a TOU Working Group that met frequently through December, 2015. The TOU Working Group collectively selected a consultant to inform their work on TOU pilot design, and the final report of the consultant to the TOU Working Group is attached to SCE's TOU Pilot Plan advice letter. The consultant report heavily informed SCE's TOU Pilot Plan development, and we expect the TOU Working Group will remain extant to consider ongoing implementation issues related to the TOU pilots, development of the survey and measurement and evaluation (M&E) plan for the pilots, default TOU pilots for 2018¹³, and the preparation of the IOUs' 2018 RDW applications.

¹¹ D.15-07-001 at 165.

¹² ACR at 1.

¹³ By a letter submitted on November 30, 2015, the IOUs requested that the submission of default TOU pilot designs be delayed until December 16, 2016. This request was accepted by email ruling of ALJ McKinney on December 23, 2015.

SCE's proposed TOU pilots include the following elements:

- Three TOU rates will be tested, with varying levels of complexity and price differentiation. Rate 1 has a six hour peak period (2-8pm), while Rate 2 has a three hour peak period (5-8pm) and shoulder peak periods in the summer. Rate 3 is a three-season rate with a super-off-peak rate during spring afternoons.
- SCE proposes summer price differentials of approximately 1:1.5 for Rate 1, approximately 1:4 for Rate 2 and approximately 1:2.5 for Rate 3.
- A control group will remain on the existing tiered rate structure without a time-differentiated element. This will allow evaluators to test the impact of the TOU rate on a customer's load, bill and acceptance.
- Thousands of SCE customers will be recruited onto each TOU rate and the control rate. SCE will use a "pay-to-play" recruitment approach that will help defend against biased samples.
- The pilots will begin in June 2016 and last until December 2017.
- SCE will track pilot participants that have existing PCTs and observe the PCT customer's engagement with their TOU pilot rate.
- Pilot participants will be surveyed to determine their acceptance, understanding and engagement with the rate they are placed on.

As noted previously, SCE proposes to collect information on various questions related to how its customers interact with the piloted rates, including:

- How TOU rates affect economically vulnerable customers and senior customers.

- The average peak and off-peak change in energy usage for each TOU rate; the bill impacts for CARE/FERA customers and non-CARE/FERA customers.
- The level of customer understanding, acceptance, and engagement while taking service on a given TOU rate.
- The impact of education and outreach (E&O) materials that are tailored to various customer segments and to certain cognitive profiles/customer personas on customer understanding, acceptance, and engagement while taking service on a given TOU rate.

NOTICE

Notice of the SCE AL 3335-E was made by publication in the CPUC's Daily Calendar. SCE states that their advice letter was distributed in accordance with General Order (GO) 96-B, and was also served on the R.12-06-013 service list.

PROTESTS

SCE's advice letter was timely protested by SolarCity Corporation (SolarCity) and Environmental Defense Fund (EDF) on January 13, 2015, requesting various modifications to the Pilot Plan. SCE filed a reply to the protests on January 20, 2016.

SolarCity

SolarCity argues that the TOU pilots only test a limited set of TOU periods and that this would bias the future default TOU rate toward those periods. Specifically, the pilots would not collect information on customer response to earlier peak periods. In addition, SolarCity argues that solar and storage customers should be allowed to participate in the pilot, and that information about how these customers respond to TOU rates should inform future TOU rate design. SolarCity also requests that any recruitment, marketing or outreach material fairly articulate the reasons for late shifted peak periods, without assigning blame to solar or distributed generation customers. Finally, SolarCity argued that customers currently taking service on a discontinued TOU rate, who

choose to participate in the pilots, be allowed to resume service on their former rate once the pilot is over.

SCE replied to SolarCity's protests and mentioned that they were a member of the TOU Working Group and had the opportunity to comment on pilot proposals at the time they were developed. SCE also stated that SolarCity's concern about net energy metering (NEM) customer participation in the pilots was also dismissed by the TOU Working Group. SCE stated that SolarCity's argument concerning the ability to switch back to TOU rates after the conclusion of the pilot was moot as SCE does not anticipate closing any of its TOU rate options for residential customers prior to the anticipated conclusion of the pilot.

Environmental Defense Fund (EDF)

EDF argues that SCE's three proposed rates do are too similar to one another, EDF argues that the proposed rates don't give customers meaningful opportunities to shift load. They request a number of adjustments, including a shorter peak period for Rate 2, and more significant price ratios between peak and super-off peak periods for Rate 3, to provide a monetary incentive for customers to use energy at time when wholesale energy prices are negative. EDF also requests that SCE consider EDF's proposed "smart home" rate that was proposed to the TOU Working Group. Finally, EDF states that SCE should coordinate its pilots with other projects related to Distribution Resources Plans, utility electric vehicle pilots and the Integrated Distributed Energy Resources proceeding.

SCE replied to EDF's protest by stating that SCE's Rate 3 is very close to cost-based already and does not require further revision. SCE noted that the wholesale price of energy is not necessary the same retail price they pay for energy at a given time. SCE argued that EDF's proposal for a smart home rate was not sufficiently developed for consideration at this time.

The concerns raised by SolarCity are noted and addressed. While SolarCity criticizes elements of the TOU pilot design proposed by SCE and developed by the TOU Working Group, it is important to note that this group included SolarCity as a participant. The Decision contains few mandates for the TOU

pilots, and provides no specific requirements, guidance or direction that would support the concerns with TOU pilot design or the changes recommended by SolarCity. Therefore, their protest is rejected.

We also note that the recently created TOU Period Order Institution Rulemaking (TOU OIR) will directly address the methodology used to define TOU periods.

Similarly, EDF's protest centers on elements of TOU pilot design that they would prefer to see implemented. Like SolarCity, EDF is a participant in the TOU Working Group that helped to craft the TOU pilot designs as submitted by SCE. EDF does not cite to any portion of the Decision or the ACR indicating that their preferred pilot design elements are specifically required, and therefore the EDF protests are rejected.

DISCUSSION

It is important to ensure that implementation of SCE's TOU pilots proceeds smoothly and in accordance with the terms of this Resolution. Per the ACR, the two less-complex TOU pilots must begin by June 1, 2016, and the more complex TOU pilot must begin by October 1, 2016.¹⁴

Required information

In order to meet our statutory obligation, we find that we must consider three core pieces of information for these customers:

- 1) The average peak and off-peak change in energy usage as a result of the TOU rate.
- 2) The impact of the TOU rate on customer bills (i.e., the distribution of bill impacts for the class of customer).
- 3) The impact of the TOU rate on how these customers use energy and on these customers' choices regarding other household expenses.

¹⁴ ACR Ordering Paragraphs 2 and 3.

These core deliverables must be collected by SCE's TOU pilots in order to allow the CPUC to make its statutorily required findings before the implementation of default TOU rates for residential customers in 2019.¹⁵

The TOU Working Group process revealed the need for more information to be collected by the pilots in order for the CPUC to make an informed decision on the potential benefits and hardships faced by SCE's customers because of TOU rates. In light of the TOU Working Group's discussion, and to more fully comply with the Decision's requirement to analyze customer understanding, acceptance, and engagement while taking service on TOU rates¹⁶, it is necessary to secure the following additional information beyond the core requirements of Section 745:

- 1) The average peak and off-peak change in energy usage as a result of a given TOU rate for all customers in SCE's service territory, all customers in SCE's hot climate region and all customers in SCE's moderate climate region.¹⁷
- 2) The average peak and off-peak change in energy usage for CARE/FERA customers and non-CARE/FERA customers across SCE's territory as a whole for all three piloted TOU rates and in SCE's hot climate region for Rate 2.
- 3) The impact of a given TOU rate on the bills of CARE/FERA customers and non-CARE/FERA customers (i.e., the distribution of bill impacts) in SCE's entire territory and in the hot, moderate and cool climate regions separately.

¹⁵ Additional information that we require for each TOU pilot is detailed later in this Resolution.

¹⁶ D.15-07-001 at 129 ("Specifically, the IOUs should quickly and thoroughly evaluate all areas of transition to default TOU, including but not limited to: load shift and load reduction, customer acceptance, appropriate parameters of residential default TOU, customer classes who are not able to respond and should remain on tiered default rate, and measure of environmental and cost savings from load shift and load reduction").

¹⁷ Per SCE AL 3335-E, the hot region is comprised of SCE's climate zones 13, 14, and 15; the moderate region is comprised of SCE's climate zones 5, 9, and 10; and the cool climate region is comprised of SCE's climate zones 6, 8, and 16.

- 4) The impact of a given TOU rate on how customers change their energy usage and on these customers' choices regarding other household expenses.
- 5) The level of understanding, acceptance, and engagement while taking service on a given TOU rate among various customer groups.
- 6) The impact of PCTs on energy usage and/or customer understanding, acceptance, and engagement while taking service on a given TOU rate.
- 7) The impact of education and outreach (E&O) materials that are tailored to various customer segments (including seniors, renters, and non-English speaking customers) and to certain cognitive profiles/customer personas on customer understanding, acceptance, and engagement while taking service on a TOU rate.

These constitute the deliverables that must be collected by SCE's TOU pilots. In the event that SCE believes that its TOU pilots will not be able to collect these deliverables, SCE is ordered to immediately notify Energy Division and the Executive Director of the CPUC, as well as the TOU Working Group, and propose modifications to their TOU pilots that will ensure they collect these deliverables.

Variety within the menu of TOU pilot rates

Both the Decision¹⁸ and the ACR¹⁹ require that a menu of TOU rates be offered to customers to ensure that there is adequate opportunity for a variety of residential

¹⁸ D.15-07-001 at 134 ("Consistent with our statutory obligations pursuant to AB 327, it is important to remember that any default TOU rate derived from this decision will be optional and it is essential that the IOUs provide a menu of well-designed optional tariffs, including a tiered rate, for residential customers to opt into. Most parties in this proceeding have advocated this 'menu' of options, to promote customer choice,[citation] and we agree that a menu of choices for customers is part of the goal of this proceeding and AB 327").

customers to select the TOU rate that best reflects their needs. It also requires research on customer acceptance and response to a variety of rate structures. Therefore it is necessary for the pilots to study not only possible default TOU rate structures but also to study the viability of more complex TOU rate structures and customer response to these more complex rate structures.

Two components of this menu approach are the number of seasons and the distribution and timing of peak/off-peaks hours for a given TOU rate. SCE proposes three different TOU rate structures, all with different peak hour and/or off-peak hour distributions and one with a three-season structure. The proposed rate structures conform to the Decision and the ACR and are therefore acceptable.

A third component of the menu approach is price. Some residential customers may be less sensitive to price than others, while other customers may be very sensitive to price and would therefore react more strongly to peak/off-peak price differentials. At the same time, customers will have differing abilities to shift load regardless of price. It is expected that this load shift will reduce overall utility costs to the benefit of all ratepayers and in accordance with the state's broad policy goals.²⁰ Thus, it is essential to study the impact of price on customers.

SCE's proposed rate design and pricing for their three TOU pilots appears below.

¹⁹ ACR at 3 ("[I]t is necessary to develop and evaluate a variety of TOU rate designs that may either be used as a model for a default TOU rate in 2019, and/or as viable forward-looking pricing options that accommodate the changing conditions of the grid, fulfill California's long term energy policy objectives, and appeal to a variety of residential customers at that time").

²⁰ See D.15-07-001 at 143-144 ("TOU should be a flexible customer-empowering tool to make the load curve more manageable. As EDF describes it, using TOU to 'increase customers' ability to be an active part of the grid will be critical to ensuring that California achieves its emission reductions, renewables and other landmark clean energy policies'... A wide-scale TOU rate for residential customers must be flexible enough to account for load shifts from year to year, while providing customers with certainty required by AB 327. This can be accomplished through the menu of rate options proposed by many parties... Options for design of TOU rates that must be considered going forward include... tranches of optional TOU rates with complementary TOU periods that considered together address grid needs, but do not impose unreasonable hardship on individual customers").

SCE Rate 1 Weekday																									
Month	Hour Beginning																								
	12am	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	
Jan	Super Off-Peak														On-Peak						Super Off-Peak				
Feb																									
Mar																									
Apr																									
May																									
Jun	Super Off-Peak								Off-Peak						On-Peak						Off-Peak	Super Off-Peak			
Jul																									
Aug																									
Sep																									
Oct	Super Off-Peak														On-Peak						Super Off-Peak				
Nov																									
Dec																									
SCE Rate 1 Weekend																									
Month	Hour Beginning																								
	12am	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	
Jan	Super Off-Peak																								
Feb																									
Mar																									
Apr																									
May																									
Jun	Super Off-Peak								Off-Peak																Super Off-Peak
Jul																									
Aug																									
Sep																									
Oct	Super Off-Peak																								
Nov																									
Dec																									

SCE Rate 2 Weekday																								
Month	Hour Beginning																							
	12am	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm
Jan	Super Off-Peak								Off-Peak								On-Peak		Off-Peak		Super Off-Peak			
Feb																								
Mar																								
Apr																								
May	Super Off-Peak								Off-Peak								On-Peak		Off-Peak		Super Off-Peak			
Jun																								
Jul																								
Aug																								
Sep	Super Off-Peak								Off-Peak								On-Peak		Off-Peak		Super Off-Peak			
Oct																								
Nov																								
Dec																								
SCE Rate 2 Weekend																								
Month	Hour Beginning																							
	12am	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm
Jan	Super Off-Peak								Off-Peak														Super Off-Peak	
Feb																								
Mar																								
Apr																								
May	Super Off-Peak								Off-Peak														Super Off-Peak	
Jun																								
Jul																								
Aug																								
Sep	Super Off-Peak								Off-Peak														Super Off-Peak	
Oct																								
Nov																								
Dec																								

SCE's Pilot Rate 3

SCE Rate 3 Weekday																												
Month	Hour Beginning																											
	12am	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm				
Jan	Off-Peak																Mid-Peak				Off-Peak							
Feb	Off-Peak																Mid-Peak				Off-Peak							
Mar	Off-Peak																Super Spring Off-Peak				On-Peak				Off-Peak			
Apr	Off-Peak																Super Spring Off-Peak				On-Peak				Off-Peak			
May	Off-Peak																Super Spring Off-Peak				On-Peak				Off-Peak			
Jun	Off-Peak																On-Peak				Super On-Peak				On-Peak			
Jul	Off-Peak																On-Peak				Super On-Peak				On-Peak			
Aug	Off-Peak																On-Peak				Super On-Peak				On-Peak			
Sep	Off-Peak																On-Peak				Super On-Peak				On-Peak			
Oct	Off-Peak																Mid-Peak				Off-Peak							
Nov	Off-Peak																Mid-Peak				Off-Peak							
Dec	Off-Peak																Mid-Peak				Off-Peak							

SCE Rate 3 Weekend																												
Month	Hour Beginning																											
	12am	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm				
Jan	Off-Peak																Super Off-Peak				Mid-Peak				Off-Peak			
Feb	Off-Peak																Super Off-Peak				Mid-Peak				Off-Peak			
Mar	Off-Peak																Super Off-Peak				Mid-Peak				Off-Peak			
Apr	Off-Peak																Super Off-Peak				Mid-Peak				Off-Peak			
May	Off-Peak																Super Off-Peak				Mid-Peak				Off-Peak			
Jun	Off-Peak																Super Off-Peak				Mid-Peak				Off-Peak			
Jul	Off-Peak																Super Off-Peak				Mid-Peak				Off-Peak			
Aug	Off-Peak																Super Off-Peak				Mid-Peak				Off-Peak			
Sep	Off-Peak																Super Off-Peak				Mid-Peak				Off-Peak			
Oct	Off-Peak																Super Off-Peak				Mid-Peak				Off-Peak			
Nov	Off-Peak																Super Off-Peak				Mid-Peak				Off-Peak			
Dec	Off-Peak																Super Off-Peak				Mid-Peak				Off-Peak			

SCE's Pilot Rate Pricing

SCE provided the following illustrative pricing for their pilot TOU rates in their TOU pilot plan advice letter. SCE did not provide an estimate of the baseline credit, so we are unable to describe the prices for baseline quantities of energy in SCE's TOU pilots. The table below therefore displays prices for energy consumed over 100% of baseline.

TOU Period	\$/kWh (> 100% Baseline)
SCE Pilot Rate 1	
Super Off-Peak Winter	\$0.239

TOU Period	\$/kWh (> 100% Baseline)
On-Peak Winter	\$0.287
Super Off-Peak Summer	\$0.249
Off-Peak Summer	\$0.298
On-Peak Summer	\$0.373
SCE Pilot Rate 2	
Super Off-Peak Winter	\$0.172
Off-Peak Winter	\$0.266
On-Peak Winter	\$0.291
Super Off-Peak Summer	\$0.171
Off-Peak Summer	\$0.317
On-Peak Summer	\$0.689
SCE Pilot Rate 3	
Super Off-Peak Winter	\$0.167
Off-Peak Winter	\$0.232
Mid-Peak Winter	\$0.267 (weekdays) \$0.268 (weekends)
Super Off-Peak Spring	\$0.167
Off-Peak Spring	\$0.232
Mid-Peak Spring	\$0.268
On-Peak Spring	\$0.287
Off-Peak Summer	\$0.232
Mid-Peak Summer	\$0.268
On-Peak Summer	\$0.287
Super On-Peak Summer	\$0.591

SCE's proposed TOU pilot rate options adequately consider the needs of both price-sensitive and price-insensitive customers by virtue of their relative price differentials. For example, Rate 1's summer peak to off-peak differential is approximately 1.25:1 and the summer peak to super off-peak differential is approximately 1.50:1. Rate 2's summer peak to off-peak differential is approximately 2.20:1 and the summer peak to super off-peak differential is approximately 4.02:1. These ratios for Rates 1 and 2 reflect pricing at the Tier 2 level of consumption, and do not include the baseline credit, which will change over the course of the pilots in accordance with the tier collapse glidepaths²¹ set forth in D.15-07-001.

Rate 1 may be preferred by price-insensitive customers, while Rate 2 may provide greater savings to price-sensitive customers who are able to shift load from peak to off-peak or super off-peak hours. However, in order to fully realize the vision set forth by the Decision and the ACR of a menu of optional TOU rates that better matches system needs, we must learn about the customer response to an even broader variety of TOU rate structures and price signals in this opt-in pilot phase so that the IOUs can adequately prepare their 2018 RDW applications to include a menu of TOU rates.

As discussed above, the ACR clarifies that at least one pilot from each utility be a more complex TOU rate that would address "the changing conditions of the grid, fulfill California's long term energy policy objectives, and appeal to a variety of residential customers."²² Such an optional rate is not required, either in statute or by Commission precedent, to have a baseline credit.

A substantial discount on the order of 50% or more, relative to the average applicable residential rate (non-CARE or CARE) may be necessary to provide the desired incentive for increased consumption during super-off-peak hours.²³

²¹ D.15-07-001 ordered the gradual transition or "glidepath" from four tiers to two tiers, with a baseline credit, from 2015 through 2018, in order to smoothly introduce incremental billing impacts to customers.

²² ACR at 1.

²³ See Faruqui, Ahmad & Sanem Sergici, "Arcturus: International Evidence on Dynamic Pricing", *ELECTRICITY JOURNAL*, VOL. 26, ISSUE 7: 55-56 (2013) for support for these findings. Specifically, see Figure 11 "Arc of Price Responsiveness" which indicates that demand

Further, the ratio of seasonal peak to super-off-peak rates should be at least 2.5 to 1. From Table 1 below, it can be seen that SCE's proposed Rate 3 spring season weekday rates do not satisfy these conditions, at least for customers in Tier 2, who consume more than baseline quantities.

Table 1: SCE's Proposed Spring Weekday Rate 3 with a Hypothetical Untiered TOU Rate

	Peak	Off-Peak	Super-off-peak	Ratio (Pk/SOP)	% Discount (SOP)*
Tier 1	18.1 cents	12.6 cents	6.1 cents		
Tier 2	28.7 cents	23.2 cents	16.7 cents	1.72	17%
Hypothetical untiered rate**	25 cents	18 cents	10 cents	2.5	50%

*relative to an estimated 20 cent average non-CARE residential rate

**This hypothetical rate is intended to illustrate the type of rate that could provide adequate incentive to increase consumption in super-off-peak periods.

While SCE's Tier 1 rates seem attractive, a majority of customers consume more than baseline quantities in some months, and therefore pay Tier 2 rates during those months. We find that SCE's Tier 2 spring weekday super-off-peak rates (16.7 cents per kWh)²⁴ are too high to provide adequate incentive to increase consumption in super-off-peak periods. Furthermore, offering a 50% discount relative to the average residential rate as illustrated in Table 1 would be unlikely to violate the rate floor consisting of the sum of nonbypassable costs (NBCs) and marginal costs.

By this Resolution, we therefore order SCE to file a supplemental advice letter proposing an optional TOU rate that is revenue neutral to its Rate 3 proposal, has

response increases with the price differential and that a peak to off-peak ratio of at least 2.0 would be required to elicit a 5% change in demand. Because most of the studies included in the Brattle Group's Arcturus database concentrate on summer season price response, the Arcturus data has limited relevance to the proposed spring season Rate 3 experiment. Nevertheless, Arcturus represents the best available data and indicates that a robust price differential is likely to be necessary to elicit the desired demand response.

²⁴ These are illustrative rates as stated in SCE's advice letters.

the same TOU periods and seasons as the proposed Rate 3, but does not contain a baseline credit. For non-CARE customers, the untiered Rate 3 proposal must have a super-off-peak rate that is at least 50% below the seasonal average non-CARE residential rate. For CARE customers, the untiered Rate 3 proposal must have a super-off-peak rate that is at least 50% below the seasonal average CARE residential rate. Both non-CARE and CARE versions of the untiered Rate 3 must have a ratio of seasonal peak to super-off-peak rate of at least 2.5.

While this approach would distinguish SCE's Rate 3 from the other IOUs' TOU pilot rates and the control group, we believe that there is sufficient comparability to obtain reliable and useful results about the differential load and billing impacts across each service territory with and without a baseline credit. Essentially, the comparison of SCE's Rate 3 group to the control group would test two variables – TOU and baseline credits – as opposed to the single variable of TOU. When compared to PG&E's proposed Rate 3, which maintains a baseline credit, the SCE pilot of an untiered Rate 3 may provide important information about the baseline credit and its interaction with TOU pricing.

Sampling Strategy

SCE's proposed recruitment targets for each rate (excluding the additional recruitment for their technology treatment) are reproduced below.

Table IX-1
Segmentation & Proposed Sample Size Requirements

Climate Zone	Segment	Rate 1	Rate 2	Rate 3	Control	Total
Hot	CARE/FERA	625	1,354	625	1,354	3,958
	Non-CARE/FERA	625	1,533	625	1,533	4,317
	Total	1,250	2,888	1,250	2,888	8,275
Moderate	CARE/FERA	625	625	625	625	2,500
	Non-CARE/FERA	625	625	625	625	2,500
	Total	1,250	1,250	1,250	1,250	5,000
Cool	CARE/FERA	625	625	625	625	2,500
	Non-CARE/FERA	625	625	625	625	2,500
	Total	1,250	1,250	1,250	1,250	5,000
All	CARE/FERA	1,875	2,604	1,875	2,604	8,958
	Non-CARE/FERA	1,875	2,783	1,875	2,783	9,317
	Total	3,750	5,388	3,750	5,388	18,275

This proposal includes oversampling (beyond their percentage representation in the general population) of CARE/FERA customers on all three rates, seniors (where a senior is the head of the household) in the hot climate region for Rate 2 and households with incomes less than or equal to (\leq) 100% of the Federal Poverty Guidelines in the hot climate region for Rate 2. This oversampling is necessary to make the findings related to “senior citizens” and “economically vulnerable” customers required by P.U. Code § 745(c)(2).

We agree with SCE and the TOU Working Group that the proposed sampling strategy supports analysis of the data upon completion of the pilots that accommodates all proposed definitions of “senior citizens” and “economically vulnerable” customers, and is therefore sufficient for the Commission to make its findings under P.U. Code § 745(c)(2). For example, the consultant report clarifies that “there are more households in the population based on the latter definition [households with at least one senior] than there are based on the former definition [a senior is the head of the household].”²⁵ Thus, there will be sufficient pilot participants to conduct the required analysis for the “senior citizens” group under either definition.

The definitions of “senior citizens” and “economically vulnerable,” amongst others, were the subject of briefs filed by parties to R.12-06-013 on December 23, 2015 and January 11, 2016. In those briefs, the IOUs request that the Commission use this Resolution to resolve the legal brief, rather than issue a separate Decision. However, this Resolution is solely intended to determine whether the proposed pilots meet the requirements laid out in D.15-07-001 and the ACR. Therefore, we decline to resolve the legal briefing issues here.

Should SCE find that the sample sizes as described in their advice letter require modification, while still ensuring that the deliverables as outlined in this Resolution are collected, then SCE may send a letter to the Director of Energy Division any time before April 1, 2016 requesting modification of their TOU pilot sample sizes. The Director is not required to approve the sample size

²⁵ Consultant Report at p. 39 n. 24

modification, and has the discretion to require the use of sample sizes as described in the original TOU pilot advice letter.

If, in the course of recruitment, SCE experiences difficulty in meeting its recruitment targets, it must consult with its pilot implementation consultant, Energy Division and the TOU Working Group on additional steps it can take to meet the recruitment targets.

SCE's proposals for meeting its mandated deliverables

The final report of the consultant to the TOU Working Group (consultant report) is attached to SCE's advice letter. The consultant report details the specific ways in which SCE plans to collect the mandated deliverables, including sampling methodologies, recruitment strategies and statistical precision.

The particular details of SCE's implementation plans are too numerous to mention here, and we refer interested parties to the consultant report for more information. Generally speaking, we find that the mechanisms outlined in the consultant report are reasonable and should be used to guide the implementation of SCE's TOU pilots.

Below we outline the detailed experimental design approaches that are contained in either the consultant report or in SCE's TOU Pilot Plan that will be used to collect the mandated deliverables:

Deliverable	SCE's Proposal
The average change in peak and off-peak energy usage by seniors and economically vulnerable customers in hot climate zones as a result of a given TOU rate.	SCE will employ a RCT design and pay-to-play (PTP) recruitment strategy to recruit approximately 2,888 customers onto each of Rate 2 and the control rate (the otherwise applicable tariff (OAT) or tiered rate) in SCE's hot climate region. Sample sizes will be large enough to produce load impacts with confidence intervals in the range of $\pm 2\text{-}3\%$ with 90% confidence for a variety of customer segments on Rate 2 in SCE's hot climate region, including seniors, CARE/FERA customers, and households with incomes $\leq 100\%$ of the federal poverty guidelines (FPG).
The impact of a given TOU rate on the bills of seniors and economically vulnerable customers in hot climate zones (i.e., the distribution of bill impacts).	Bills will be calculated for both treatment and control customers in two ways; as if their usage were billed on the TOU rate in question, and as if their usage were billed on the OAT. The difference between those two bills will result in a distribution of bill impacts for treatment customers and a distribution of bill impacts for control customers. Comparing the two distributions will illustrate how much of the bill impact results from structural wins and losses and how much results from changes in usage in response to the TOU rate. Sample sizes will be large enough to produce valid bill impact distributions for a variety of customer segments on Rate 2 in SCE's hot climate region, including seniors, CARE/FERA customers, households with incomes $\leq 100\%$ of FPG, and households with incomes between 100 and 200% of FPG.

Deliverable	SCE's Proposal
<p>The impact of a given TOU rate on how seniors and economically vulnerable customers in hot climate zones change their energy usage and on these customers' choices regarding other household expenses.</p>	<p>Surveys will be administered to both treatment and control customers, and will include questions regarding energy usage habits (e.g. the timing of end-use activities, thermostat settings by rate period) and barriers to load shifting or load reduction activities. Questions will also be designed to detect certain forms of hardship (e.g. not paying other bills to pay energy bill). Answers will be compared between treatment and control customers to determine whether certain behaviors or activities are higher among customers on TOU rates relative to customers on the OAT. Sample sizes will be large enough to produce valid survey data for a variety of customer segments in SCE's hot climate region, including CARE/FERA customers on Rate 1; seniors, CARE/FERA customers, households with incomes $\leq 100\%$ of FPG, and households with incomes between 100 and 200% of FPG on Rate 2; and CARE/FERA customers on Rate 3.</p>
<p>The average change in peak and off-peak energy usage as a result of a given TOU rate for all customers in SCE's service territory, all customers in SCE's hot climate region, and all customers in SCE's moderate climate region.</p>	<p>SCE will employ a RCT design to recruit customers onto the three TOU rates and the control rate. The total number of SCE customers on each of Rates 1 and 3 will be approximately 3,750, and 5,388 on Rate 2. The RCT sampling approach will also be used to create minimum samples of roughly 1,250 customers for each TOU rate in each of SCE's hot, moderate and cool climate regions. Sample sizes will be large enough to produce load impacts with confidence intervals in the range of $\pm 2\text{-}3\%$ with 90% confidence for all customers for a given TOU rate across SCE's service territory as a whole and for a given TOU rate in each of SCE's hot and moderate climate regions.</p>

Deliverable	SCE's Proposal
The average change in peak and off-peak energy usage as a result of a given TOU rate for CARE/FERA and non-CARE/FERA customers across SCE's territory as a whole and in the hot climate region for Rate 2.	The RCT design, PTP recruitment strategy and recruitment targets described above will create sample sizes large enough to produce load impacts with confidence intervals in the range of $\pm 2\text{-}3\%$ with 90% confidence for CARE/FERA and non-CARE/FERA customers for a given TOU rate across SCE's service territory as a whole and for Rate 2 in SCE's hot climate region.
The impact of a given TOU rate on the bills of CARE/FERA customers and non-CARE/FERA customers (i.e., the distribution of bill impacts) in SCE's entire territory and in the hot, moderate and cool climate regions separately.	Bills will be calculated for both treatment and control customers in two ways; as if their usage were billed on the TOU rate in question, and as if their usage were billed on the OAT. The difference between those two bills will result in a distribution of bill impacts for treatment customers and a distribution of bill impacts for control customers. Comparing the two distributions will illustrate how much of the bill impact results from structural wins and losses and how much results from changes in usage in response to the TOU rate. Sample sizes will be large enough to produce valid bill impact distributions for CARE/FERA and non-CARE/FERA customers for a given TOU rate across SCE's service territory as a whole and in each of SCE's hot, moderate and cool climate regions.

Deliverable	SCE's Proposal
<p>The impact of a given TOU rate on how CARE/FERA customers and non-CARE/FERA customers – in SCE's entire territory and in the hot, moderate and cool climate regions separately – change their energy usage and on these customers' choices regarding other household expenses.</p>	<p>Surveys will be administered to both treatment and control customers, and will include questions regarding energy usage habits (e.g. the timing of end-use activities, thermostat settings by rate period) and barriers to load shifting or load reduction activities. Questions will also be designed to detect certain forms of hardship (e.g. not paying other bills to pay energy bill). Answers will be compared between treatment and control customers to determine whether certain behaviors or activities are higher among customers on TOU rates relative to customers on the OAT. Sample sizes will be large enough to produce valid survey data for CARE/FERA and non-CARE/FERA customers for a given TOU rate across SCE's service territory as a whole and in each of SCE's hot, moderate and cool climate regions.</p>
<p>The level of understanding and acceptance of the TOU pilot rates among various customer segments and how they engage with the rate to potentially lower their energy bills.</p>	<p>The recruitment approach for SCE's TOU pilots does not allow for a direct measure of acceptance rates for each rate option because customers are being paid to participate in the study (and to stay on the rate) and will be randomly assigned to the three different TOU pilot rates. However, surveys will be used to assess customer awareness, understanding, acceptance and satisfaction and these metrics can be compared across rate options as an indirect measure of customer acceptance. Sample sizes will be large enough to produce valid survey data for a variety of customer segments.</p> <p>As part of the end-of-pilot survey in the summer of 2017, customers will be asked whether they would prefer to stay on the TOU rate or return to the OAT. They will also be asked if they would prefer one of the other TOU rates if they had an option. Following payment of the last portion of the incentive, which will be made after completion of the end-of-pilot survey, differential dropout rates will be tracked as an indicator of customer preferences.</p>

Deliverable	SCE's Proposal
<p>The impact of PCTs on energy usage and/or customer understanding, acceptance, and engagement while taking service on a given TOU rate.</p>	<p>Using the same RCT design and PTP recruitment strategy described above, SCE will recruit an additional 3,750 customers who have already installed smart thermostats in their homes. These customers will be randomly assigned to either Rate 1, Rate 3 or the control group. Sample sizes will be large enough to produce load impacts with confidence intervals in the range of $\pm 2\text{-}3\%$ with 90% confidence for Rates 1 and 3 across SCE's service territory as a whole. Answers to survey questions pertaining to customer awareness, understanding, acceptance, and satisfaction and other metrics will be compared between the treatment and control groups to determine whether there are significant differences in these metrics. Sample sizes are large enough to produce valid survey data.</p> <p>As part of the end-of-pilot survey in the summer of 2017, customers will be asked whether they would prefer to stay on the TOU rate or return to the OAT. They will also be asked if they would prefer one of the other TOU rates if they had an option. Following payment of the last portion of the incentive, which will be made after completion of the end-of-pilot survey, differential dropout rates will be tracked as an indicator of customer preferences.</p>

Deliverable	SCE's Proposal
The impact of education and outreach (E&O) materials that are tailored to various customer segments (including seniors, renters, and non-English speaking customers) and to certain cognitive profiles/customer personas on customer understanding, acceptance, and engagement while taking service on a TOU rate.	Surveys will be used to assess usefulness and preferences for each of the primary types of E&O materials. Responses will be compared across rate options, customer segments and customer personas to determine whether different treatment groups, customer segments or customer personas find some materials more or less useful than others. Answers to survey questions pertaining to customer awareness, understanding, acceptance, and satisfaction and other metrics will also be compared across rate options, customer segments and customer personas to determine whether there are significant differences in these metrics.

Ensuring E&O material is appropriately tailored to a variety of different customers to ensure the success of the TOU pilots

The transition of California IOU customers to TOU rates will be a complex process that requires extensive education and outreach to customers to help them understand TOU rates. It is important that the TOU pilots test E&O approaches that will help the IOUs ensure that the rollout of TOU as a default residential rate in 2019 is a success and that Californians fully understand the value in the switch to TOU rates.

SCE proposes to develop two sets of E&O curricula, "Basic" and "High Engagement," in order to examine the impact of different E&O approaches on customer awareness, knowledge, attitude and behavior.²⁶ While we recognize the value of examining the differential impact of the "Basic" and "High Engagement" curricula, the success of the TOU pilots may be jeopardized by a lackluster E&O effort. Therefore, we order SCE to offer the "High Engagement" E&O curriculum to at least 75% of pilot participants, and the "Basic" E&O

²⁶ AL 3335-E at A 38.

curriculum to no more than 25% of pilot participants. This distribution provides for an examination of the differential impact of the two E&O curricula while ensuring that the majority of pilot participants are exposed to high levels of E&O.

The collateral for each curriculum will include key messages in large print and will be provided in customers' preferred language. Beyond this basic level of targeting, SCE will also draw on various other customer data points, including but not limited to, bill amounts, usage, outage experience, program participation, channel affinity/usage, demographics and psychographics,²⁷ to ensure that its E&O messages are relevant and resonate with different customer personas. SCE proposes to either purchase a third-party solution or to use its own in-house expertise in behavioral science to accomplish this segmentation. Either approach is acceptable, so long as the approach draws on and speaks to the different motives behind customer energy usage behavior.

Technology

SCE proposes to recruit approximately 3,750 customers who already have smart thermostats installed in their homes to examine if and how these tech-enabled customers use the devices to reduce demand when on TOU rates. The TOU Working Group hypothesizes that these customers will respond to TOU rates more so than customers without smart thermostats, as has been shown for smart thermostat owners enrolled in Critical Peak Pricing programs.²⁸ These customers will be randomly assigned to Rate 1, Rate 3 or the control rate.

SCE will be able to measure the average peak and off-peak change in energy usage on a given TOU rate for these customers. SCE will explore the feasibility of third parties performing direct load control (such as pre-cooling and temperature set-back) after the first 12 months of the pilot. Load impacts can be compared between the first and second summers to examine whether and to what extent load control affects average peak and off-peak energy usage. Surveys will be also used to measure these tech-enabled customers' understanding of, acceptance of and satisfaction with a given rate.

²⁷ AL 3335-E at A 40.

²⁸ Consultant Report at 8.

We find that SCE's proposed technology treatment will provide useful information regarding the potential for smart thermostats to enable load shifting behavior and/or to enhance customer understanding, acceptance, and engagement while taking service on a given TOU rate.

Recruitment

SCE proposes to send recruitment letters to between 170,000 and 650,000 customers through direct mail. SCE also proposes to send recruitment letters to an additional 500,000 customers via email, and may also conduct outbound calling to customers who do not respond to either the direct mail or email recruitment offer. Additionally, SCE proposes to offer bill protection to all pilot participants, either at the end of 12 months on the pilot rate or when they leave the pilot (whichever comes first). The IOUs are conducting pre-tests to examine a number of facets of the recruitment process, including delivery channel, incentive amount, payment schedule, bill protection and the enrollment rates of different customer segments.²⁹

We find SCE's recruitment approach to be generally reasonable, but recognize that many elements of the final recruitment drive will be impacted by the results of the IOUs' recruitment pre-tests. However, SCE must offer bill protection to pilot participants if it is determined by Energy Division to be necessary to achieve recruitment targets and participant retention. If bill protection is ultimately offered, we order the bill protection credits to be recorded in SCE's Residential Rate Implementation Memorandum Account (RRIMA), not in SCE's Distribution Revenue Adjustment Mechanism.

We therefore order SCE to consult with its pilot implementation consultant, Energy Division and the TOU Working Group on the final recruitment approach once the pre-test results become available.

SCE will exclude from the pilots those customers included in P.U. Code § 745(c)(1) – which generally includes customers with a medical need for electricity or who otherwise require special notice for disconnection. We note that

²⁹ Insert cite to more specific information in the pilot plans around recruitment.

“customers who the commission has ordered cannot be disconnected from service without an in-person visit from a utility representative,”³⁰ may include customers who are not already flagged in SCE’s databases. In order to address this concern, the TOU Working Group agreed that language would be included in the recruitment materials asking participants to self-certify at the time of enrollment into the pilot that losing power due to nonpayment would not put their health or safety at risk. We therefore order SCE to include the necessary language in its recruitment materials.

SCE will use a third party data service to determine household characteristics (e.g. the federal poverty level of households) in order to target its recruitment to achieve the necessary samples. However, we order SCE to also include questions in its recruitment materials to collect self-reported data on the following: household income, number of people in the household, number of seniors in the household, and whether the head of household is a senior. We order SCE to consult with its pilot implementation consultant, Energy Division and the TOU Working Group to determine whether to use the third party data or the self-reported data to assign enrolled customers to sampling segments. SCE must develop and maintain practices to assure that individual customer data confidentiality is maintained both within its own use of such records as well as in any reports to CPUC staff and the Working Group.

In addition, we order SCE to provide key information in large print in all recruitment materials to facilitate participation by visually impaired customers, including seniors. We also order SCE to provide in-language support to those customers who call SCE to ask questions and/or to enroll in the pilot to further facilitate participation by non-English speaking customers.

Interaction of other customer communications with the experimental integrity of the TOU pilots

The Decision requires SCE to send paper bill comparisons to their customers twice per year starting in 2016.³¹ It is likely that if TOU pilot participants receive these bill comparisons, the experimental integrity of the TOU pilot may be

³⁰ P.U. Code § 745(c)(1).

³¹ D.15-07-001 at 142.

compromised. This is because customers receiving the comparison may be told that they would be better off under a different rate and therefore would be encouraged to leave the experiment at the same time that their participation is most critical. SCE states that it will “attempt to ensure” that pilot participants do not receive these mailings. However, we find that the potential for disrupting the pilots is severe and therefore order SCE to ensure that paper bill comparisons are not sent to their opt-in TOU pilot participants – including the control participants.

SCE also proposes to shield pilot participants from other mailings for campaigns or programs not specifically related to the pilot study. We support this proposal.

Evaluation and analysis of the data that emerges from the TOU pilots

The vast amount of data that emerges from the TOU pilots will require extensive ex post measurement and evaluation (M&E) to produce the deliverables outlined in the previous section. Much of the information to be gathered from the TOU pilots will depend on surveys of pilot participants. This is particularly true concerning the explanations for behaviors underlying any shift or reduction in usage by pilot participants, and the impact of E&O materials on customer understanding of, acceptance of and engagement with a given TOU rate.

While both SCE’s advice letter and the consultant report attached to the advice letter begin the process of detailing the survey topics, surveying methodology, ex post M&E and evaluation criteria to be used to generate this information, we make no finding at this time concerning these items. Instead, we note that SCE, along with the other IOUs and the TOU Working Group, will be scoping and issuing a Request for Proposals (RFP) for a survey and M&E consultant(s). Thus, we order SCE to work closely with this consultant, the Energy Division and the TOU Working Group to develop the TOU pilot participant survey topics, surveying methodology, ex post M&E methodologies and evaluation criteria.

We expect this working relationship to closely mirror that of the Project Coordination Groups (PCGs) that exist in the Energy Efficiency Evaluation,

Measurement and Verification Plan.³² Specifically, we order SCE to initiate a Level 3 PCG, or Research Project Team, that is responsible for project scoping, and vetting of instruments and deliverables.

However, with respect to the number and timing of surveys, we make two specific findings. The second survey is to occur after pilot participants have been on the rate for a full 12 months, which may not occur until July 2017, not June 2017 as detailed in SCE's advice letter.³³ In addition, SCE will consult with the survey consultant, the Energy Division and the TOU Working Group to decide whether or not to survey pilot participants a third time after the summer of 2017, and whether or not to offer an incentive payment for completion of this survey.

Cost of the TOU pilots

In its TOU advice letter, SCE estimated that the cost of all three TOU pilots may fall in a range of \$10,240,640 to \$20,608,079. The actual costs will not be precisely known until after the pilots are completed, but SCE states that the top end of the range represents the highest costs that are expected.

These costs will be tracked in a memorandum account and their reasonableness will be assessed in a future CPUC proceeding.

SCE must include information on the actual costs incurred as the pilots progress in its quarterly Progress on Residential Rate Reform report.³⁴

Approval of SCE's TOU Pilot Plan advice letter

We find that SCE's proposed TOU pilots are largely sufficient to gather the required information and meet the required deliverables but must be modified as

³² 2013-2015, Energy Division & Program Administrator, Energy Efficiency, Evaluation, Measurement and Verification Plan, Version 5, CPUC, May 2015 at 293-294. Generally, a Level 3 PCG discusses the research objectives, data collection instruments, and overall methodologies for a given study. The Level 3 PCG consists of IOU staff, ED staff, and any contractors/consultants.

³³ AL 3335-E at A 2 and A 47.

³⁴ See D.15-07-001 at 299.

outlined in this Resolution. SCE shall file a supplemental advice letter in compliance with this Resolution within 21 days. We conditionally approve the proposed tariffs in SCE's advice letter, with the exception of Rate 3 as noted above, and order SCE to file final updated tariffs and updated rate tables in the supplemental advice letter.

COMMENTS

Public Utilities Code section 311(g)(1) provides that this resolution must be served on all parties and subject to at least 30 days public review and comment prior to a vote of the CPUC. Section 311(g)(2) provides that this 30-day period may be reduced or waived upon the stipulation of all parties in the proceeding.

The 30-day comment period for the draft of this resolution was neither waived nor reduced. Accordingly, this draft resolution was mailed to parties on January 25, 2016 and comments were submitted by SCE on February 16, 2016.

The CPUC considered comments that focused on factual, legal, or technical errors and made appropriate changes to this resolution.

In their comments SCE first points out that there will be a delay in the beginning of pilot rate 3 to June 22, 2016, and that the participation of all FERA customers on all pilot rates will also be delayed until June 22, 2016. So long as SCE ensures that at least 12 months of data are collected from these delayed participants then the adjustment to the schedule is acceptable.

SCE notes in their comments that they will accept this resolution's modifications to their pilot rate 3. They also accept that Energy Division will determine whether bill protection will be offered, provided that such determination is timely. We expect that Energy Division will be timely in its decision, but we clarify that the discretion as to what constitutes such timeliness ultimately rests with Energy Division.

SCE states that they will comply with this resolution's instructions that the age of the head of household be collected by an enrollment survey. We clarify our original intent in this revised resolution by pointing out that it is only the senior/non-senior status of the head of household that is required.

SCE requests that this resolution clarify that pilot participants should be prevented from accessing online rate comparison tools as well as paper rate comparisons. SCE is authorized to do so if it feels it is reasonable and necessary.

SCE requests that this resolution's order that SCE offer direct load control technology to some pilot participants be revised so that SCE is allowed to explore such an offer instead. Upon review of the final consultant report and other TOU Working Group materials, it appears the original draft of this resolution was in error and the modification sought by SCE is contained in the current version of this resolution.

SCE seeks clarification that even if bill protection payments are tracked in their Residential Rate Implementation Memorandum Account (RRIMA), they will be ultimately recorded in an appropriate revenue-related balancing account. We reject SCE's interpretation. As the bill protection costs are costs directly related to the TOU pilots, they must be recorded and collected through the RRIMA.

SCE notes that they will exercise flexibility to reasonably limit the number of in-language translations required for TOU pilot E&O. SCE is authorized to do so.

In their table of proposed copy edits, SCE notes a typographical error on page 5 of the draft resolution (use of the word monitoring instead of measurement). This change has been made. SCE's other proposed copy edits not discussed above are rejected.

FINDINGS

1. Southern California Edison's (SCE's) proposed rate structures conform to D.15-07-001 (the Decision) and the Joint Assigned Commissioner's and Administrative Law Judge's Ruling (ACR or Ruling) of September 24, 2015 and are therefore acceptable, notwithstanding our required changes to SCE's Rate 3.
2. We find that the mechanisms outlined in the time-of-use (TOU) Working Group's final report are reasonable and should be used to guide the implementation of SCE's TOU pilots.

THEREFORE IT IS ORDERED THAT:

1. Southern California Edison Company's (SCE's) Time-of-Use (TOU) Pilot Plan advice letter (AL 3335-E) is approved as modified herein.
2. SCE is directed to submit a new three-season rate to be piloted in lieu of its proposed Rate 3. The new Rate 3 should:
 - a. Be revenue-neutral to the proposed Rate 3 with baseline credits;
 - b. Have the same TOU periods and seasons as the proposed Rate 3;
 - c. Be designed without a baseline credit;
 - d. Have a spring-season peak to super-off-peak ratio of at least 2.5 to 1.
 - e. For non-CARE customers, have a super-off-peak rate that is at least 50% below the seasonal average non-CARE residential rate;
 - f. For CARE customers, have a super-off-peak rate that is at least 50% below the seasonal average CARE residential rate.
3. SCE shall offer its "High Engagement" E&O curriculum to at least 75% of pilot participants and the "Basic" E&O curriculum to no more than 25% of pilot participants.
4. SCE will draw on various customer data points, including but not limited to, bill amounts, usage, outage experience, program participation, channel affinity/usage, demographics and psychographics, to target its E&O messages at different customer personas.
5. SCE will leverage third party data and/or the principles of behavioral science to achieve appropriate, strategic segmentation.
6. SCE shall consult with its pilot implementation consultant, Energy Division and the TOU Working Group on the following:
 - a. A final recruitment plan.
 - b. Whether it is necessary (as determined by Energy Division) to offer bill protection to pilot participants to achieve recruitment targets and participant retention; and if bill protection is offered, SCE shall record the bill protection credits in its Residential Rate Implementation Memorandum Account.
7. SCE will provide key information in large print in all recruitment materials to maximize opportunity to participate by the vision impaired.

8. SCE will provide in-language support to those customers who call SCE to ask questions and/or to enroll in the pilot.
9. SCE must consult with its pilot implementation consultant, Energy Division and the TOU Working Group to determine whether to use the third party data or the self-reported data to assign enrolled customers to sampling segments. SCE must develop and maintain practices to assure that individual customer data confidentiality is maintained both within its own use of such records as well as in any reports to CPUC staff and the Working Group.
10. In the event that SCE believes that its TOU pilots will not be able to collect the deliverables as outlined in this Resolution, SCE is ordered to immediately notify the CPUC, as well as the TOU Working Group, and propose modifications to their TOU pilots and/or schedules that will ensure they collect these deliverables.
11. SCE is ordered to ensure that the deliverables as outlined in this Resolution are presented as part of its January 1, 2018 Rate Design Window (RDW) filing for a default TOU rate and menu of TOU rate options.
12. SCE must work closely with the survey consultant, Energy Division and the TOU Working Group to:
 - a. Develop the TOU pilot participant survey topics, survey plan and the M&E plan used to generate the information we require.
 - b. Decide whether to survey pilot participants a third time after the summer of 2017, and whether or not to offer an incentive payment for completion of this survey.
 - c. Initiate a Level 3 Project Coordination Group, or Research Project Team, that is responsible for TOU pilot measurement and evaluation scoping, and vetting of instruments and deliverables.
13. SCE must ensure that paper bill comparisons are not sent to TOU pilot participants, including the control participants, in order to ensure the integrity and successful execution of the pilots.
14. SCE must include information on the actual costs incurred as the pilots progress in its quarterly Progress on Residential Rate Reform report.

15.SCE shall file a supplement to AL 3335-E within 21 days of this Resolution's adoption with modifications reflecting the judgment of this Resolution.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on February 25, 2016; the following Commissioners voting favorably thereon:

TIMOTHY J. SULLIVAN
Executive Director